AU/ACSC/192/1999-04

AIR COMMAND AND STAFF COLLEGE

AIR UNIVERSITY

QUALITY MANAGEMENT IN THE ARMY:

HOW WILL IT AFFECT FORCE XXI

by

Michael S. Simpson, Major, USA

A Research Report Submitted to the Faculty

In Partial Fulfillment of the Graduation Requirements

Advisor: Lt Col Edward J Bergemann

Maxwell Air Force Base, Alabama

April 1999

Disclaimer

The views expressed in this academic research paper are those of the author and do not reflect the official policy or position of the US government or the Department of Defense. In accordance with Air Force Instruction 51-303, it is not copyrighted, but is the property of the United States government.

Contents

Page

Preface

In 1995, I completed the Principles of Quality Management Course as required by the Chairman of the Joint Chiefs of Staff. During the course taught by the Atlantic Rim Group, flashbacks of the 1988 enforcement of Total Quality Management (TQM) into the Army system began to haunt me. Myself, and others in the Quality Management Course, realized that not much had happened to the TQM process that we rejected when it was first introduced. Now with the vision of Force XXI – the next generation military- quickly approaching, I wondered how Quality Management had further changed since 1995, and had it been planned for in the upcoming Force XXI. Moreover, I wondered if I had been too hasty in my decision to reject TQM. The answer at first seemed to be no, but as you read on, Quality Management is not what it once was, with such concepts as Revolution in Military Affairs and others. Thus, there seems to be a few good aspects of quality that, if planned for properly, may serve to help improve our service

I would like to acknowledge those who helped make this project. First, the helpful people at the Quality Management Offices of the Secretary of Defense and the Army. Secondly, a thanks goes to my peers and mentors for sharing their experiences. Next, a thanks goes out to the staff of the Air University Library for assisting in my endeavor. Lastly, I am appreciative of the guidance of my faculty advisor, Lt Col Ed Bergemann, for helping me keep my logic trail straight.

Abstract

As the Army transitions towards Force XXI, it has had to balance the implementation of quality management with downsizing, budget cuts and reorganization. Moreover, because of its unique roles and missions, the Army's Total Army Quality (TAQ) office has to deal with many units either rejecting quality management or using it incorrectly. The Army, unlike the private sector and other military services, still relies heavily on its people despite the advances of technology and the Information Age. Therefore, it is important to examine whether or not quality management is right for our next generation military, in this case the Army? Furthermore, if the match is not right, can we fix it? Through a study of both the civilian and military quality management concepts, and linking it with Force XXI, this paper concludes that there are some areas where quality management works and some areas where it does not. This research focuses primarily on command and control, operations, intelligence, and logistics. Specifically, it was important to note that many people have confused the distinctions between leadership versus management, efficiency versus effectiveness, strategy versus statistical analysis, customer satisfaction, soldier capability, and others. The Army will likely be forced to address these long-term issues as it revises its Army Regulation 5-1, *Army Management Philosophy*.

Chapter 1

Introduction

> *The many Best Practices that have developed from our Quality Management successes represent the innovative efforts of the men and women who are helping us move into the 21st Century.*[1]
>
> —Secretary of Defense William Cohen

Statement of the Research Question

Although quality management has come a long way since its original total quality management (TQM) concept, are we using quality management correctly as we approach the next generation of military…Force XXI? Moreover, to what degree have we dehumanized the battlefield and allowed quality management to degrade the decision making process? Specifically, this study will focus on how we can adjust quality management to meet the challenges of Force XXI for the U.S. Army.

Background and Significance of the Problem

From 1986 to 1989, the U.S. military molded the concept of Total Quality Management which the Army reluctantly adopted. By 1993, the failures of forced TQM took their toll and by 1996, TQM dissolved from its original form leaving a legacy of concepts such as empowerment, customer satisfaction, and tiger teams all centered around a new term called Total Quality. Although the term management has dropped

from the official Army Total Quality title, management concepts remain inherent in quality concepts and fuse civilian practices into Army policy. The quality philosophy remains today, but in a more rounded form. Our military leaders now seem more worried about computer chips and bandwidth than accomplishing the mission. Quality has reached beyond management and has embraced command and control, operations, intelligence, and logistics. Although not in its original rigid TQM form, some concepts of quality are likely to continue into the next century because it works, appears to work, and/or is mandated. Impacting on quality is the Force XXI. Challenges of technology combined with realities of budget cuts and force reductions require a process of change that is Force XXI. Force XXI, and its related Army XXI concept, shape all aspects of the Army, not just concentrating on equipment innovations or weapons and their platforms.

Limitations of the Study

Quality Management concepts have been around since before 1900 with the application of mass production, which was further refined after 1900 to focus on product efficiency. It later evolved after 1950 from product-oriented quality to process-oriented quality.[2] Due to the limitations of time and space, the definition of quality management will begin with the process-oriented era and quickly move into the impact on the military since the 1980s. Military quality management concepts expressed in this paper will focus primarily on events since 1990 when long term vision planning created Force XXI.

It is important to note that the Army is only a part of the military's overall Force XXI concept. Due to the limitations of time and space, the following research has focused only on the Army portion of Force XXI. More specifically, this paper is limited to the primary Army functions of Command and Control, Operations, Intelligence, and Logistics. Other

career fields exist, but they are more supportive in nature and can derive many of the same conclusions already stated here. Because the other military services are different and apply Force XXI in their own unique way, not all concepts expressed here apply equally among all the services, although some similar conclusions can be drawn.

Definitions and Assumptions

Because this study examines the merger of two concepts - Quality Management and Force XXI, - it is imperative these concepts be defined. That is the purpose of the next two chapters. The concept of Quality Management will be defined beyond the limits of just personnel and group dynamics. It will also include concepts related to operational and support functions beyond the normal office workplace. Force XXI, however, will be more specific in its definition. This study defines Force XXI primarily in the terms of the Army's role. This study also assumes that new concepts and innovations will occur before the turn of the century and that future of the Army may not unfold exactly as planned. Moreover, adjusted military roles and missions may occur as a result of our changing National Security Strategy and National Military Strategy. As a result, this study examines events at the present and does not assume that all factors will remain constant, ultimately affecting the overall assessment.

Preview of the Argument

The quality management change in relation to our 21st Century Army is evolutionary, and in a spiral development phase that involves thinking, testing, applying, and rethinking, retesting, and so on.[3] From this spiral process, we can see that invariably, quality and Force XXI are linked as we transition into the next century. A clear

understanding of the link is needed to establish a focus where lines have blurred between leadership or management, efficiency or effectiveness, and strategy or statistical analysis.

This research will attempt to show that quality has a place in our modern military. It will likely show, however, that this role is not in the traditional context known by the private sector due to the unique nature of the military. To show this relationship, it is important first to define Total Quality Management and how it has evolved. Second, the development of Force XXI and its Army component must be defined. Then, the two will be compared to demonstrate that within certain fields such as command and control, operations, intelligence, and logistics, that some aspects of quality management, if adjusted properly, can play a role in the Army's future. In doing so, some benefits and shortfalls such as the Army's quality regulations, focus on leadership versus management, and process versus product may occur, and they will be assessed.

To tie it all together, the paper will show the relationship between critical elements that enable quality to enhance military operations. The emphasis on product versus process, motivation, leadership versus management, training, and empowerment will be analyzed in terms of the unique quality relationships the Army has built to operate as part of Force XXI. The results will shape how the Army plans to employ quality management and structure its guiding doctrine of the future such as updating *the Army Management Regulation*, AR 5-1. It all starts with the basics of quality management and as we will now review, how the original concepts has evolved into today's Total Army Quality concept.

Notes

[1] Secretary of Defense. Memorandum, Subject: *Quality Management*, (11 August 1997).

[2] Ted A. Lowe and Joseph Mazzo. "Crosby Deming Juran: Three Preachers, One Religion." *Quality*, 25, (September 1988): 22-25.

[3] *Army Magazine: 1998-99 Green Book*. Association of the United States Army, (October 1998): 26.

Chapter 2

Definition of Quality Management

This is not an effort that requires infusion of capital. This is an effort that requires a massive amount of thinking.

—Richard Goodrum, Ethyl Corporation

Introduction

The federal government, to include the Department of Defense (DoD), has evolved into a more quality conscious agency. From the initial launch of Total Quality Management in the mid 1980s, a transition has taken us to the new, broader Quality Management term. Quality management not only includes the internal workings of an organization, but also the relationships an organization has with other external agencies such as suppliers. Technology, budgets, and the drawdown have had an impact on quality management and today, Total Army Quality (TAQ) is still struggling with the principles and guidelines which form the framework for all Army management decisions, and reinforce the relationship between leadership and management.

History of Total Quality Management

The real beginning of DoD quality improvement programs can be traced back to the 1970's, but it was not until President Reagan mandated in 1986, improvements in quality,

timeliness, and efficiency government-wide, that Total Quality Management (TQM) was born.[1] The Navy's successful use of Deming's quality improvements philosophy at its Personnel Research and Development Center inspired Dr. Robert Costello, former Under Secretary of Defense for Acquisition, to defend TQM as a plan throughout all of DoD.[2] Soon thereafter, Secretary of Defense Frank Carlucci issued the DoD Posture on Quality, which spawned *the Total Quality Master Plan* implementing TQM DoD wide. The Federal Quality Institute, established in 1988 to train managers and DoD agencies in TQM, was given considerable leeway to implement quality management per their specific missions. According to the Department of Defense, TQM was originally defined as:

> "…both a philosophy and a set of guiding principles and practices that represent the foundation of a continuously improving organization. It applies human resources and quantitative methods to improve the material and services supplies to an organization, all the processes within an organization, and the degree to which the needs of the customer are met now and in the future."[3]

Management is a philosophy, which institutionalizes a never-ending process of improvement and is driven by the need to meet and exceed customer's needs and expectations. Moreover, the quality management principle works to eliminate waste and rework and makes use of the brainpower of all people in the organization. The basic requirements for quality include: management leadership, employee participation, sensitivity to the customer, continual improvement, and employee training. The civilian sector has often made every effort to incorporate TQM where possible, giving rise to the notion in DoD, that it too could take on the exact TQM model in its entirety.[4] Since TQM was initiated in the 1980s, we have modified it for DoD and gone beyond the basic principles outlined by notable management scholars Dr. W.E. Deming, Dr. Phillip

Crosby, and Dr. J.H Juran. The TQM modifications for DoD were few, and included primarily a focus on readiness as the endstate through fewer failures and reduced costs. This is in contrast to the civilian endstate of increased market share.[5] The basic concept of process efficiency, however, remained the same. The reduction in failure, by the Army in particular, was perceived as a zero-defect mentality and was often resented by the leadership who were taught not to be punished for initiative for the sake of improvement. Top government officials from the President on down continue to advocate that "nowadays, quality management is the official policy of the United States Government and don't you forget it."[6]

Evolution to Today's Quality Management

Although some may think Revolution in Military Affairs (RMA) has replaced TQM as the acronym of choice among members of the Armed Forces, the Army remains focused on formalizing quality management. The Under Secretary of the Army was given oversight of the Army's quality program, known as Total Army Quality (TAQ), and the Vice Chief of Staff of the Army is responsible for quality management improvement efforts Army-wide through its Directorate of Management created in 1992.[7] On 21 February, 1995, the Army Training and Doctrine Command (TRADOC) identified the Army Logistics Management College as the training proponent for Total Army Quality."[8] While the focus at TRADOC is the training of company grade officers, warrant officers and senior noncommissioned officers, the Army's Quality Management office in Washington DC worked to update Army Regulation 5-1, *Army Management Philosophy*. The regulation which is dated 1992, is not very in-depth, however, the Army Quality Management office's *Leadership for Total Army Quality Concept Plan* is more

comprehensive about today's quality management. The concept plan is staffed only at the senior directorate level, and lays out a four phased approach of awareness, assessment, team building, and action for implementing Total Army Quality.[9] It is from the concept plan that AR 5-1 was developed. The goals of TAQ are to improve efficiency and ensure that non-value added work is discontinued. It is also to identify the work processes that are beneficial and cost effective.[10]

In an effort to promote quality, the Army has participated in many programs to reward efficiency. The Army regularly competes in programs such as the David Packard Excellence in Acquisition Award and four Army units won the 1999 President's Quality Award.[11] Currently, the emphasis on quality management has achieved a measurable increase in efficiency; however, the program to instill the commitment of leaders and the importance of training is still in its infancy. The TAQ infrastructure of Executive Steering Councils, Quality Management Boards, and Process Action Teams, has been identified as a starting place to further promote the advancement of TAQ.

To lead us into the next century, the TAQ process identifies the precepts of quality management as:[12]

1. Leadership's commitment and personal involvement
2. Development of a customer focused organizational environment
3. Universal participation in continuously improving work process
4. Establishment of a tailored infrastructure
5. Meaningful assessment process measuring progress towards achieving goals
6. Universal education and requirements based training
7. Meaningful recognition
8. Achieving planned results

Now that we have examined how TQM has evolved into today's total quality for the Army, defining the future of the Army will lead us to the challenge of incorporating quality into the next century military.

.

Notes

[1] Department of Defense. *Small Business Guidebook to Quality Management*. OSD Quality Management Office, (1995): 2.

[2] Department of Defense, Letter, Subject: Implementation of Total Quality Management in DoD Acquisition, (4 August 1988).

[3] Department of Defense Directive 5000.51. *Total Quality Management*, (16 June 1989).

[4] Atlantic Rim Corporation. *Seminar 102: Principles of Quality Management*. (Process Management International. 1995): II-15 – II-16.

[5] Ibid., II-16.

[6]Vice President's National Performance Review. "Reinventing Government." Address to the Federal Quality Conference. (2 August 1995): 1.

[7] Department of the Army. *Leadership for Total Army Quality Concept Plan.* (1993): 9.

[8] Department of Defense. *Total Quality Newsletter*. (June 1997): 12.

[9] Department of the Army. *Leadership for Total Army Quality Concept Plan.* (1993): 3.

[10] Department of Defense. *Total Quality Newsletter*. (June 1997): 15.

[11] Department of the Army. “Leading Change”. Total Army Quality. (internet website .www.hqda.army.mil/leadingchange. 1999)

[12] Department of the Army. AR 5-1. *Army Management Philosophy*. (June 1992): 2.5.

Chapter 3

Definition of Force XXI

> *I will tell you, we are using every means available to us to project ourselves into the future…we are reading everything we can about the world in the 21st century. And then we are trying to create the worlds of the 21century and force ourselves into the 21st century.*[1]
>
> —General Gordon R. Sullivan,
> Former Army Chief of Staff

Introduction

The future of the Army in which the Total Army Quality (TAQ) management systems will function is known formally as Force XXI. To understand how TAQ will work in the future, we must first define Force XXI. Force XXI is the transformation of a military into the modern age by maximizing the use of information and digital technologies to create a synergistic effect among all the operating systems, organizations, and components.[2] According to our senior military leadership such as the Army Chief of Staff and the Secretary of the Army, soldiers will be the most important element of Force XXI to leverage the development of technology.[3] Nevertheless, the common theme of technology is found throughout all the Force XXI official publications. According to the *Force XXI Operations Pamphlet 525-5*, the Army's conceptual framework for Force XXI is centered around the following:[4]

1. New Doctrine and Concepts

2. New Processes
3. Modernization and Digital Technologies
4. Distributed Interactive Simulations
5. Space-Based Systems
6. Integration of Experiments with Training
7. General Headquarters Exercises

From these Force XXI principles, quality will have a direct link due to the interaction of technology and people. Moreover, how these principles are prioritized to meet unique future Army requirements and missions will determine unit effectiveness.

Force XXI: The Army Component

Each military service has its own roles and functions as part of Force XXI. The Army component of the future Force XXI will define how the Army operates from the years 2000 towards the year 2020. It will also determine the ability to operate in the joint arena. The next step beyond Force XXI is called the Army After Next (AAN). The Army's Force XXI "will capitalize on validated information technologies and quality soldiers to maintain the full spectrum and overmatch capabilities of America's Army well into the next century."[5] Many AAN wargames will be the key to testing our futuristic organizational structures and functions. The Advanced Warfighting Experiments (AWE) field exercises conducted since 1997 are the basis for designing and fielding networked and digitized divisions and corps. It is these exercises that will exemplify the efficiency of the Army in the next century through a proper balance of technology and people-oriented decisions. The Army operations process will be more technologically advanced resulting in a "knowledge-based force, characterized by clarity of observation, shared situational awareness, and a pace of decision-making unparalleled in the history of warfare."[6]

What Has Been Done So Far

As mentioned previously, the Army has placed a great deal of emphasis in the AWE validation of it technology placement into the field organizations. The AWE concept balances a mix of soldier skills to facilitate a highly technical unit. Leadership challenges erupt daily on how best to maximize the quality of the final product with the needs of missions of Force XXI. In support of the operational agenda, there has been great emphasis in training to support the notion that the Army is a function of its people. Technologically, the schoolhouses have focused on integrating digital systems into the curriculum. The Army Command and Staff College for instance, has worked closely with the first planned digitized division, the 4th Infantry Division at Fort Hood, to integrate the Army Battle Command System (ABCS) into the course.[7] The ABCS is the evolving architecture for seamlessly linking all strategic, operational and tactical battlefield automated systems in an effort to provide real-time situational information and sensor data to decision-makers at all levels of command and staff.

Although much has been done to integrate technology into the Force XXI process, much work remains in the area of doctrine, concepts and training. The keystone warfighting text Field Manual 100-5, Operations, for instance, is under review. Additionally, much controversy still surrounds the results of the performance of soldiers and leaders during exercises to test digitized units. The key question was, were the personnel trained and culturally ready to accept the highly technological equipment they were given? Many soldiers and junior leaders abandoned the technology during the digitized unit testing in favor of older systems that were more responsive to human decision making inputs. Optimistically, however, training and cultural shift to a base of

soldiers more adept to modernization will overcome our hesitation of using technology in a wartime environment.

How will Force XXI Look

The goal of Army as part of Force XXI is to be fully integrated with the rest of the military to effectively accomplish the roles and missions of tomorrow. A diverse range of missions combined with a smaller force will require a quality organization that operates at peak efficiency. As we move forward, the Army is changing from a forward-deployed and Industrial Age army trained, equipped, and postured to stop a Soviet advance in Europe, to an Information Age, power projection army.[8] As a result, the Army is drawing on the Military Technical Revolution as it structures, equips, and trains a force that will make this concept a reality. The transformation of the Army into Force XXI, a power projection army for the Information Age, will be achieved by implementing a vision built on modernization objectives that reorganize, consider relations to capabilities, and strike with precision with the right equipment with the right force structure and maneuver.[9] Unnecessary risks will not be tolerated, but the mentality remains that dangerous missions must still be accomplished with zero defects.

The Role of Force XXI in the Joint Arena

Force XXI is supported by the Joint Chiefs of Staff Joint Vision 2010 full spectrum dominance requirements. The proper quality decisions ensure a successful relationship between all the services and their unique capabilities. Overall, the Army of the future will build on its six operating imperatives as identified by the most recent Posture Statement that include a quality force, dynamic and realistic training, a proper force mix, demanding

and realistic training, continuous modernization, and competent and confident leaders.[10] To maintain its position as a viable part of the joint military, the Army's Force XXI process is centered around "spiral development."[11] Spiral Development means keeping the Army's six imperatives synchronized over time as we move toward 2020, and making sure Army doctrine matches Joint Doctrinal developments. Furthermore, Army doctrine must match new equipment, personnel, training, leader development initiatives and force design. Complicating force design will be the challenges of asymmetrical warfare and military operations other than war necessary to fulfill our National Military Strategy objectives.[12]

From the previous descriptions of the Army's total quality program in relation to Force XXI, the challenge is how the two will fit together. The Army is unique and requires a different perspective on quality than typical civilian organizations or other military services. Moreover, the future of the Army requires that the quality process be tailored to meet the challenges of a fast pace, and technical organization. The link can be seen in doctrine such as AR 5-1 and examining the role leadership, process, and doctrine play in Force XXI.

.

Notes

[1] Department of the Army. *Force XXI: America's Army of the 21st Century*. Office of the Chief of Staff, (Fort Monroe, Va. 1995): 3.

[2] Ibid., 6.

[3] *Army Magazine: 1998-99 Green Book*. Association of the United States Army, (October 1998): 20.

[4] Training and Doctrine Command. PAM 525-5, *Force XXI, Operations*. (Fort Monroe, Va. August 1994): 10-12.

[5] Department of the Army. *United States Army Posture Statement FY99*. (February 1998): 31.

[6] Ibid., 31

Notes

[7] Jim Tice. "At Staff College, the Future is Digital". *Army Times.* Vol 95, No 25, (January 1999): 10.

[8] Earl Tilford Jr. *The Revolution in Military Affairs: Prospects and Cautions*. (Carlisle Barracks, Pa. Strategic Studies Institute, June 1995): 4.

[9] Ibid.

[10] Department of the Army. *United States Army Posture Statement FY99*. (February 1998): 26-27.

[11] *Army Magazine: 1998-99 Green Book*. Association of the United States Army, (October 1998): 26

[12] Joint Chiefs of Staff. *National Military Strategy of the United States of America*, (1997).

Chapter 4

Merging Quality Management and Force XXI

The Army is not made up of people—the Army is people.

—General Creighton W. Abrams,
Army Chief of Staff 1972-74

Introduction

The different roles and missions of the Army, and emphasis placed on people over technology, will affect how quality is utilized. According to Total Army Quality doctrine, it is the Army's six enduring imperatives mentioned previously that serve as the guide to achieving our leadership's vision on quality. Nevertheless, there are doubts about the trendy practices that comprise the quality management movement.[1] For instance, worker teams, such as tiger teams, have lengthened the cycle time of the process. By increasing the number of participants in the decision cycle, the amount of time it takes to reach a decision has increased despite the nature of the crisis. Also, those who have incorporated TQM into their units often believe that most quality improvements are equally beneficial for all units regardless of the type. Therefore, emulating the practices of top performing units, also known a benchmarking, is a popular concept.[2] Nevertheless, not all units or staffs are the same, and with the advent of Force XXI, many will become even more diverse because technology and the amount of human

involvement will be different in each organization. Moreover, our roles and missions have changed in response to operations other than war and urban warfare. This has caused a revolutionary focus in time versus mission and the proper mix of quality among the operational and support functions of the U.S. Army. The leaders of our Army cannot always expect subordinates to perform without direction, therefore, it is important to communicate the process toward a vision. As part of the mission building process, some tools of quality management can be tailored within some areas of an organization.

Within the organization, however, not all areas are alike, thus quality will not be applied equally across all organizations. Moreover, the future of Force XXI will shape a new dimension of quality employment. Applying quality to command and control, operations, intelligence, and logistics, covers the majority of key Army warfighting capabilities. Each is mutually supporting, thus quality is mutually inclusive, but often in varying degrees and methods depending on the circumstances.

Applied Quality

Command and Control

In the demanding Army of the future, management without good leadership will not get the mission accomplished in the most efficient way possible. A good team leader pulls the team along in the direction it already wants to go. Where the facilitator must be neutral for management to succeed in a TQM environment, the opposite is true in the Army where the leader is passionately involved in the outcome. Therefore, Total Quality Management would better be phrased using leadership versus management principles. The US Navy has already done this. Total Quality Leadership (TQL) is the US Navy's

doctrine for quality management that is based upon the five major elements of application, philosophy, implementation, structure, and scientific approach.[3] The fourth element, management structure, could easily be adapted into the Army's philosophy and Quality Management Regulation AR 5-1. The Navy's TQL element of management structure says that

> "Changes in systems and processes are managed through the chain of command. Significant mission-related processes typically cross functional areas. Therefore, cross-functional teams at the executive, middle, and supervisory levels must be linked for communication and coordination of efforts. These teams concentrate on gathering and applying information to improve mission effectiveness." [4]

The Army's approach to incorporating leadership is buried in its *Leadership for Total Army Quality Concept Plan* instead of its AR 5-1, which is more widely disseminated. Quality can be matched with the leaders responsibility for timely decisions in our modern, fast-paced battlefield. Historically, TQM was based on the concept that those closest to the customer must be "empowered" to act on the problems and opportunities they face.[5] This management principle takes responsibility from the leader of today's fast paced world, where there simply is not enough time to pass an issue up the chain of command for approval. Frontline leaders must be able to correct problems on the spot, and although technology can help make the flow faster, it cannot make the decision for us, nor accept the responsibility. Force XXI empowerment of its leaders must be supported by new skill and knowledge. Through training, frontline leaders must have access to critical strategic information so they can make good decisions. In conjunction with technology, an accurate overview of the issue can quickly assimilate many sources of input in a short period of time. Modern collating and parsing programs can serve as good leadership tools. Thus, commanders can independently make quick

accurate decisions. These decision are the key to how missions will be executed. The operations of the unit require more daily personal interaction and although quality is important for a smooth operation, it is employed differently than under the command and control requirements.

Operations

At the root of operations is planning, training and execution.[6] Also, within the operations field, the emphasis is on actual performance versus expectations. Thus, the quality process that meets mission requirements is at the core of the organization around which it is built. The technological capability of Force XXI is the key to operations for most services because of their emphasis on equipment. For the Army, however, quality will take on a different balance shifted more toward personal interaction because there is still a great deal of emphasis placed on the knowledge of the people. Therefore, the application of quantitative methods used to assess and improve the processes within an organization must be tempered with the knowledge of the people. This will alleviate the tendency to confuse efficiency (a key concept of TQM) with effectiveness (accomplish the mission).[7]

Under the pre-Force XXI quality management system, our problem solving teams such as tiger teams and task forces were made up of subordinates as well as leaders who give the group authority to implement changes. But this often meant statistics became a substitute for strategy. Moreover, our soldiers did not feel they had ownership of the process because leader involvement at every step of the process meant the military culture was threatened by micro-management, zero defects, and Management By Objective (MBO).[8] To fix this, Force XXI, through its streamlined processes and

Information Age technology, can now have its problem solving teams do the bulk of its work without the organization's leaders. Then, when the facts are gathered and the options are developed, the leader can make a decision without the cumbersome task of managing a problem solving team along with the day-to-day responsibilities of the organization. This distinction of management and leadership in the operations field is similar to what how the Army currently operates its Uniform Code of Military Justice (UCMJ) system. In order to maximize an unbiased decision that is best for the entire organization, the investigation is performed by those who know the problem best, and the decision is made by the leader given the authority to enforce it.

With an appropriate plan in place, the organization can now train according to the given task. Training within Army XXI can benefit from quality management. The most important factor is to measure the success of the people performing the task as well as the process used by the people. The quality management system in place today is primarily an evaluation of how to improve a process based solely on the performance of that process. This process is known in the Army management philosophy as the continuous improvement cycle and is derived from the Inductive-Deductive Learning Integration Shewhart cycle.[9] Because people are the key to Army XXI, it is more important that we emphasize capability as a result of training, rather than determining key parameters and metrics selection. As a result, our task-condition-standards manuals upon which the Army is measured can incorporate the skill of the user as well as the performance of the equipment. This concept can be described in modern quality management as "Process Oriented Thinking", where it is important in a matured total quality environment that leadership view the organizational system as interrelationships, not things, which

involves planning by everyone.[10] Therefore, modern day modeling, simulation, or training should be geared to include as many participants as possible. This does not mean everyone should be responsible for decision making, but everyone should be involved in the process to ensure there are no gaps of knowledge among the parts (people) of the unit that make the mission happen.

Before commanders make decisions that affect operations, an intelligence base is built. If the quality concepts is not congruent between operations and intelligence, commanders will not get adequate and timely information. Unlike operations, however, intelligence relies more on technology, therefore, quality is applied as a system.

Intelligence

As with other elements of the Army, the focus for Intelligence in the drive towards Force XXI has been technology. For this reason, the "quality soldier" has again been left out of the picture. Force XXI intelligence's primary thrust for the Army has been on its new family of systems and the architecture support.[11] While these technological advances are important, they require new concepts and doctrine to support the modernization plan. Included in this concept is the need to reintroduce the human factor. As in the case of Revolutionary War reconnaissance, our military commanders have relied for centuries on the need for trained intelligence soldiers to operate freely on the battlefield. The technology cannot work without the operator. One example is the new All Source Analysis System (ASAS). If a computer used to parse, depict, analyze, then disseminate intelligence from higher echelons to lower echelons and the commander. ASAS reaches its limitations quickly due to the overwhelming amount of raw data, and

the difficulty with accurately parsing the material in a timely manner for use by the commander.

The challenge will be finding the time to train the analyst and operator. Given the reduced manning and increased requirements, time and personnel are at a premium in the intelligence field. Force XXI has taken our military from a threat based force to a capabilities based force. In the intelligence field, it is still the threat that remains the key ingredient. A highly advanced graphically displayed situation template is useless without the analyst to explain it. Nevertheless, the incorporation of digital technology across all our battlefield systems will give commanders and soldiers unprecedented capability to collect and share intelligence. A capability-based quality focus works well with operations and logistics, but does not apply to intelligence. Quality for intelligence exists to ensure integration of people with systems. Moreover, time is a critical ingredient for intelligence, therefore, the emphasis in the quality process is short with more emphasis given to the final intelligence product as a required decision-making item for the commander.

Logistics

The logistics field was the first to embrace quality management and will likely be the one most likely to exploit its successes into the next century. The key element of quality management to emphasize is that quality refers to the extent that units satisfy their mission requirements. The logistics community regularly uses the term customer. But in the Army, who really is the customer? In most cases, it is not the soldier, but other services and the civilian population. Since mission accomplishment is the gauge we are measured upon, the improvement process should put each soldier in the position to

systematically analyze and change process factors so that they work together to better improve quality.[12] The Army, unlike the private sector, is a monopoly and already in a win-win situation. Therefore, emphasis should be placed on cooperation, but not to the degree that the original TQM model abandons competition completely because our mission is still to win the nation's wars.[13]

Nevertheless, Total Army Quality has been fully embraced into the logistics arena as indicated by the numerous TAQ programs. These programs are primarily related to production such as reducing supplier costs, reengineering financial processes, and reducing production cost.[14] The logistics field adopted many business efficiency practices, and those not adopted have gone out to the civilian community in the form of outsourcing or privatization. Unlike other areas in the Army, logistics is one area where quality management is the most appropriate. The civilian community concepts of quality management focus on product and process, as does military logistics. Moreover, leadership and training are driven more by technology's infrastructure and money, than human interface, when it comes to logistics missions. Therefore, digitization can effectively be incorporated into the quality management process. As a part of Force XXI, it is imperative the Army logistics systems be functional, such as converting from a supply-based system to a distribution-based system.[15] In this manner, the Army as part of the joint system evaluates how, for instance, a part failed, and does not just stock up more parts to compensate for the increased rate of failure.

Logistically, Army XXI is on track with such systems as Activity Based Costing and competing for productivity excellence awards. But in logistics, as well as in command and control, operations, and intelligence, performance should be measured by mission

accomplishment supported by a standard. According to the original TQM model proposed by Dr. Deming and adopted by the military, standards have been substituted for a time consuming process of evaluation, reengineering, and further study.[16] The Army has begun to make decisions through consensus. In the battlefields of the future, where time and assets are a premium, consensus must be limited to the planning stage, measured according to the mission standard in the training phase, but left to the leaders to execute in the decision phase.

Although command and control, operations, intelligence, and logistics require some quality management, each uses it in a different way. That requires proper understanding of quality management to ensure that each situation is handled differently and one generic standard is not haphazardly applied across the board. Generally, the functional areas in the Army are more people oriented and will continue to be into the next century as part of Force XXI. That requires a different quality balance between people and technology than generally found in other military services or the civilian community. To facilitate a better understanding of congruence about quality throughout an organization, the principles adopted in the *Total Army Quality Concept Plan* appear to be a good answer for the shortcomings of the AR 5-1, the Army Quality Management Philosophy.

.

Notes

[1] Department of the Army. *Total Quality Newsletter*. (November 1997): 10-11.

[2] Department of the Army. "Leading Change". Total Army Quality (internet website .www.hqda.army.mil/leadingchange. 1999).

[3] Steven Dockstader and Archester Houston. *Total Quality Leadership: A Primer*. Department of the Navy, (Total Quality Leadership Office, 1997): 13-14.

[4] Ibid., 14.

[5] Atlantic Rim Corporation. *Seminar 102: Principles of Quality Management*. (Process Management International. 1995): V-28.

Notes

[6] Training and Doctrine Command. PAM 525-5. *Force XXI, Operations*. (Fort Monroe, Va. August 1994): 20.

[7] Earl H.Tilford Jr. *The Revolution in Military Affairs: Prospects and Cautions*. (Carlisle Barracks, Pa. Strategic Studies Institute, June 1995): 13.

[8] Ibid., 14.

[9] George Box. *Total Quality: Its Origins and Its Future*. Center for Quality and Productivity Improvement. (University of Wisconsin. 1995): 2.

[10] Steven George and Arnold Weimerskirch. *Total Quality Management; Strategies and Techniques Proven at Today's Most Successful Companies*. (John Wiley and Sons, Inc., 1994): 2

[11] Department of the Army. *Intel XXI…Strategy for the 21st Century*. Office of the Chief of Staff for Intelligence, (Washington DC, 1997): 2.

[12]Steven Dockstader and Archester Houston. *Total Quality Leadership: A Primer*. Department of the Navy, (Total Quality Leadership Office, 1997): 16.

[13] Department of Defense. *Small Business Guidebook to Quality Management*. OSD Quality Management Office, (1995): 23.

[14] Department of the Army. *United States Army Posture Statement FY99*. (February 1998): 60.

[15] Defense Logistics Agency, *Total Quality Management Implementation Strategy: Phase I*. Directorate of Quality Assurance, (DLA, May 1989): 5.

[16] Atlantic Rim Corporation. *Seminar 102: Principles of Quality Management*. (Process Management International. 1995): V-39 - V-41.

Chapter 5

Analysis

For us, "quality management" means staying 10 steps ahead of a world where change is the only constant. [1]

—Deputy Secretary of Defense John P White

Affects of Quality Management-Force XXI Merger

The Army is unique from other military services and the civilian sector, because it has different roles and missions, and the importance placed on people over technology. Therefore, the employment of quality will vary differently in the Army than in other settings. The hierarchical DoD rank system on which it must function is both an inherent and important element of the workplace culture. At the same time, this characteristic represents an obstacle to bottom-up organizational communication necessary for quality management efforts to generate a free flow of ideas in all directions. The breakthroughs in technology that are the officially stated driving factor for Force XXI are largely a result of the drawdown and limited budgets. Because the Army has been ordered to decrease it organizational structure, it is looking to compensate for the reduced human endeavors through advances in technology. Prior to the 1980's, TQM was focused on the product, then as modern TQM evolved, it placed its importance on process. Now that Force XXI has arrived and technology is at the forefront, TQM has regained some of the

pre-1980 emphasis on product and mixed it with process. Dr. Tilford of the National Strategic Studies Institute makes the case that "interservice rivalry and a reintroduction of the managerial ethos, this time under the guise of total quality management (TQM), may be the consequences of this revolution."[2] The role of a units leadership should be to ensure that quality is being employed congruently throughout the organization to enhance rather than destroy unit effectiveness. It is also important to review how to make the most of existing quality principles, while avoiding the traps that usually cause organizations to employ quality in a generic manner rather than tailor it to their specific needs such as command and control, operations, intelligence and logistics.

How to Exploit Advantages

Specific requirements for Army quality management are to increase its effectiveness, plan, train, and motivate its people to produce a product unequaled in the world. Through the correct balance of people versus technology, leadership affords the Army the opportunity to shape its future. To exploit the advantages of Quality Management, training is critical at all levels and will require resources. Secondly, selection of initial processes for improvement requires decision-making at the highest level to ensure buy-in and success.[3] One way to get the leadership on board with quality, is to give the responsibility that comes with decisions back to the leaders and call this process improvement Quality Leadership, as the US Navy has done in its latest quality philosophy.

An aspect often forgotten in the quality management process is motivation. Motivation is an important element to the success of quality management for both the military and the public sector. For the military, motivation is driven by leadership, but

for civilians, profit incentives and market share often mean motivation is the result of management. Where the civilian sector can offer greater variety of tools to build motivation, the military is constrained due to regulations, drawdowns, and reduced budgets. Extrinsic rewards such as profit sharing, employee stock options, sabbaticals, incentive vacations, bonuses and others, combined with intrinsic rewards such as feedback, two-way communication, and extensive employee input are available to the public sector. The military however, has only promotions as an extrinsic option, therefore it must rely on more creative intrinsic rewards.[4] A possible approach to combat the motivation challenge for the military is standardization. Because Force XXI is so technically oriented, the military will likely have a tendency to evaluate a soldier's performance based on the output of equipment. This however, relies heavily on performance of the equipment, which may not adequately reflect the soldier's skill. Therefore, skill-based rewards should emphasize performance-based rewards, to ensure greater motivation by placing responsibility for the soldier's performance back to the soldier instead of on technology.[5] Standardization of skill levels incorporated into standard operating procedures in addition to performance output standards already in existence will help give military leaders the advantage the corporate managers already have over maximizing the involvement of its workers. This concept ensures the Army is still on track with process oriented quality and has not slipped back into the pre-1950 product oriented quality.

In relation to motivational capabilities, the military must face the challenge of overworked soldiers as a result of reduced manning. Situational awareness will give the soldier the mental edge needed to keep focused on the mission. As stated in the latest

Army Posture statement, the Army can be more effective if its soldiers and leaders know where they are, know their allies, and know their enemy.[6] This is the backbone of the original process-oriented quality model, and is made possible through the Information Age development, and use of modern equipment such modern telecommunication and data links. Even though everyone now has access to the same information, not everyone should be empowered to make the decisions.

Empowerment can exist in Force XXI, but its emphasis should be on the leader, not the follower. In past TQM doctrine, followers were empowered to represent their leadership and the organization. The leaner units of Force XXI require leaders to be more efficient in their decision making to accomplish the mission while balancing the needs of the soldier. Leaders should be empowered to represent the best interests of the unit, requiring soldiers to provide input to the decision making process during the planning stages, not the decision stage. Constant change will be a part of Force XXI and managing it will require the leader's vision that quality management can provide through early planning often associated with staff interaction.

Although the Army can benefit from the correct balance of quality throughout its functional areas of command and control, operations, intelligence and logistics, the ultimate unit product is still to maintain a warrior focus. That requires latitude in the development of the number one assets in the Army….its soldiers.

How to Buffer Disadvantages

Soldier development goes hand-in-hand with unit development and how the soldier, not the customer, are the focus of training to produce an effective combat force given the resource and time constraints. The disadvantages of Quality Management in Force XXI

are that the Army may lose sight of our basic warrior skills in favor of seeking a silver bullet answer in technology to overcome the deficit left by downsizing and budget cuts. To avoid this pitfall, developments in technology should include the soldier and our age-old traditions of command. To do this, we need to better train our leadership, possibly through the use of introducing *The Total Army Quality Concept Plan* mentioned earlier into AR 5-1, since most in the Army do not know the details of the official quality concept. We also need to be aware of our quality management audience. We have overly adopted the term customer from the civilian community, creating a climate of people first and mission second. The term "customer," from the civilian Quality Management process, does not equate to the military. We do not have a customer, but we have allies, enemies, and citizens for whose freedom we defend. If the public is our customer, then it is mission success we should be measured against, not how many Army privates are involved in the decision-making process. Moreover, if service members are the customers as defined by those responsible for quality management, then it should be reemphasized that they are soldiers first.[7] Since we train like we fight and adhere to a strict chain of command, we should not let the connotations of "customer" interfere with "soldier". In the civilian sector, the customer is in charge and "always right", but in the military, the commander is in charge and held responsible whether he does it right or wrong.

More emphasis could be placed on the use of simulations as a part of the training program outlined in the *Army Management Philosophy* regulation, and concept plan. Currently, simulations training is one of the pitfalls where all too often quality training has been transferred in a generic role rather than being tailored to meet the needs of a

people oriented organization such as the Army. Current live, virtual, and constructive simulations often run independently of human interaction once initial parameters and data are established and has taken many of the decision making criteria and innovative soldier involvement out of the picture.[8] Moreover, we have diluted the fog-of-war factor. Because simulations have proven effective for training they should not be abandoned, but they should include more free play and interaction by a greater number of players down to the lowest denominator to better integrate the quality philosophy. This does not mean we have to revert back to empowerment of the old TQM, but brings us closer to training like we would fight, and includes the technology dimension. Therefore it is important not to take the Total Quality Management adopted for one system and transfer it to another lock, stock, and barrel. Yet we can take a few good lessons from quality management.

A common pitfall of quality management is the emphasis placed on perfection (the optimum solution) at the expense of time. The Army is effective if it accomplishes the mission, even if it is not the most efficient. Therefore, TQM's concept of efficiency should not give way to effectiveness in the Army. Given the limited resources (manning and budgets) of Force XXI, the perfect solution may not always be achieved, but that should not paralyzed the decision making process.[9] When the bullets are flying, it is often better to make a good decision quickly than a perfect decision later because new missions such as combating asymmetrical or urban warfare may not wait for tomorrow's decision.

Finally, the TAQ philosophy states quality training should be based on a "just-in-time" approach that ensures training is done immediately before it is required to be used and that "training too soon is a common pitfall."[10] The speed at which technology affects

our operations for the Army in Force XXI however, means that quality training will have to be done sooner. It will likely be too late if we wait until the last moment to rehearse given the complexity of many operating systems projected for the Army force. It is the lack of time, resource, and people, coupled with the changes in modern warfare that make it impossible to continue quality without some adjustments. Overall, Force XXI organizations require a concerted effort to make the most of the quality management concepts while avoiding the temptation of incorporating the principles that do not apply to its unique requirements.

.

Notes

[1] Under Secretary of Defense. *Speech on Quality Management*, (28 May 1996).

[2] Earl H. Tilford Jr. *The Revolution in Military Affairs: Prospects and Cautions*. (Carlisle Barracks, Pa. Strategic Studies Institute, June 1995): iii.

[3] Steven Dockstader and Archester Houston. *Total Quality Leadership: A Primer*. Department of the Navy, (Total Quality Leadership Office, 1997): 47.

[4] Lt Col. Keith D. Jones. *Total Quality Management as a Potential Solution to Challenges Within the California Army National Guard*, (Carlisle Barracks, Pa, US Army War College, 1996): 7-8.

[5] Federal Quality Institute. *Employee Involvement and Quality Management in the Federal Government.* (Washington DC. US Government Printing Office, 1993): 3.

[6] Department of the Army. *United States Army Posture Statement FY99.*)February 1998): 25.

[7] Department of Defense. *Small Business Guidebook to Quality Management.* OSD Quality Management Office, (1995): 3.

[8] Department of the Army. *Force XXI: America's Army of the 21st Century*. Office of the Chief of Staff, (Fort Monroe, Va. 1995): 16.

[9] George Lieghton and Bob Silberg. *Leaders Guide for How to Make Quality…Fail (government edition).* (CRM Films. Carlsbad, CA. 1996)

[10] Department of the Army. *Leadership for Total Army Quality Concept Plan.* (1993): 28.

Chapter 6

Conclusion and Summary

Summary of Findings

The government declared quality management is here to stay so the military must make the most of the situation. Nevertheless, after reviewing the evolution of quality management from the private sector into the Department of Defense, it is apparent not all quality management situations are the same. Therefore, because the military operates differently than the civilian sector, certain aspects of quality may need modification. Furthermore, the Army and its new organization, roles and missions into the 21st Century are not the same as the rest of the military and require further refinement of the quality management system. Ultimately, the unique functional aspects of command and control, operations, intelligence, and logistics require a tailored fit of quality management that is different than the generic models adopted for the civilian sector. Total Army Quality (TAQ) is a long-term effect and will require a change in culture to promote its continued success.[1]

The Force XXI process has sought to leverage the power of Information Age technology to the advantage of the Army's quality people. Therefore, through a review of merging quality management and Army XXI, this research has focused on the issue that leadership and training need to become a greater theme in the implementation of quality

management. To do this, leaders need to be more proactive. The Leadership for Total Army Quality Concept plan should be incorporated into the Army Management Philosophy regulation (AR 5-1) and disseminated to the field. Currently the concept plan is aimed more at the Executive Steering Council and Quality Management Board and less at the Process Action Team level.[2] Regardless of the Army's efforts to mold its Total Army Quality, it will still be faced with the task to align closely with the Joint Community because of the focus on Joint Operations.[3]

In preparation for Force XXI, quality management programs should emphasize effectiveness as well as the traditional efficiency. The mission comes first, and the soldier is part of a team, but not the "customer". Moreover, the role of the soldier in the quality process should be one of a contributor to planning. Once the planning team has its solution to improve a process, it is up to the leader to make the decision.

The Army has tried to instill leadership into the management process, but it still places too much emphasis on management. Lessons from the Navy's quality doctrine, supports the notion that leaders make military decisions, therefore, leadership should take the lead in quality management. Taking the lead does not mean directing and planning every problem solving team, because that has been perceived as micro-management or a zero defect mentality in the past. It is better for the members of the unit to plan and analyze, and let the leaders make the decisions based on the teams efforts. Leaders should be empowered to represent the interest of the unit, not the other way around as previously practiced. There will be little or no time for the typical TQM group huddle for a consensus decision in the modern fast-paced battlefield, therefore, decision planning needs to be conducted well in advance and rehearsed, tested, and rehearsed again.

These practices should be measured against a set of standards. Unlike normal quality management techniques, these standards need to include not just the evaluation of the process outcome, but also the step-by-step skills of the people performing the process. Each skill is different in the command and control, operations, intelligence, and logistics fields and each should be treated differently. Proper use of modern quality techniques such as simulator and exercises can be useful if employed to account for every member of the team, not just the leadership.

Then, it is up to the leadership to implement an innovative way to reward its successes. Normally, cash bonuses and other incentives would work in the private sector, but in the military, if these options do not exists, making it important to give its soldiers part ownership in the goals of the organization. This incentive is also known as motivation, and is often forgotten when quality management drives group decisions and neglects individual accomplishments. People are the key to success, not the machinery.

"In the final analysis, warfare is quintessentially a human endeavor. Technology and technologically sophisticated weapons are only means to an end".[4] Leaders are responsible for making decisions, and quality management should not be a process to replace decision-making, but rather augment it. For the Army and its unique roles in the 21st Century, quality management can play an important role, but it should be stated clearly in Army doctrine and weighted heavily with technology giving ground to soldiers.

Ultimately, the unique functional aspects of command and control, operations, intelligence, and logistics require a tailored fit of quality management that is different than the generic models adopted for the civilian sector. The Force XXI concept is heavily laced with technology, but it is still the focus on soldier skills and basic

leadership concepts, not management, that create a unique environment for the Army. Quality management principles can enhance unit effectiveness, but it must be top-driven through a system of training guidelines through a robust revision of the Army Management Philosophy Regulation, AR-5-1. The revised doctrine should incorporate the key differentiating elements of the quality-army relationship of the future as discussed in this research to ensure a successful Force XXI.

.

Notes

[1] Department of the Army. *Leadership for Total Army Quality Concept Plan.* (1993): 28.

[2] Ibid., 6.

[3] Joint Chiefs of Staff. *A Strategic Plan for the Joint Staff*. (1995): 2.

[4] Earl H. Tilford Jr. *The Revolution in Military Affairs: Prospects and Cautions*. (Carlisle Barracks, Pa. Strategic Studies Institute, June 1995): iii.

Bibliography

Army Magazine: 1998-99 Green Book. Association of the United States Army. (October 1998).

Atlantic Rim Corporation. *Seminar 102: Principles of Quality Management*. Process Management International. 1995.

Bounds, Greg, et al. *Beyond Total Quality Management*. New York: McGraw-Hill Inc., 1994.

Burnstein, Carolyn and Kathleleen Sedlak. "The Federal Quality and Productivity Effort." *Quality Progress*, October 1996, 23-41.

Box, George. *Total Quality: Its Origins and Its Future.* Center for Quality and Productivity Improvement. University of Wisconsin. 1995.

Cohen, Elliot A. and John Gouch. *Military Misfortunes*. New York: Vintage Books, 1991.

Crosby, Phillip B. *Quality Without Tears*. New York: McGraw-Hill, 1979.

Deputy Under Secretary of Defense. *Speech on Quality Management*, May 28, 1996.

Dockstader, Steven, and Archester Houston. *Total Quality Leadership: A Primer*. Department of the Navy, Total Quality Leadership Office, 1997.

Defense Logistics Agency. *Total Quality Management Implementation Strategy: Phase I*. Directorate of Quality Assurance, Defense Logistics Agency, May 1989.

Deming, W. Edwards. *Out of the Crisis*. Cambridge, Ma: Massachusetts Institute of Technology, 1982.

Department of Defense. Directive 5000.51. *Total Quality Management*, 16 June 1989.

Department of Defense. Letter, Subject: Implementation of Total Quality Management in DoD Acquisition, 4 August 1988.

Department of Defense. *Small Business Guidebook to Quality Management*. OSD Quality Management Office, 1995.

Department of Defense. *Total Quality Management Master Plan*, August 1988.

Department of Defense. *Total Quality Newsletter*, June 1997.

Department of the Army. AR 5-1. *Army Management Philosophy*, June 1992

Department of the Army. *Force XXI: America's Army of the 21st Century*. Office of the Chief of Staff, Fort Monroe, Va. 1995.

Department of the Army. *Intel XXI…Strategy for the 21st Century*. Office of the Chief of Staff for Intelligence, Washington DC, 1997.

Department of the Army. *Leadership for Total Army Quality Concept Plan*, 1993.

Department of the Army. *Total Quality Newsletter*, November 1997.

Department of the Army. "Leading Change". Total Army Quality website .www.hqda.army.mil/leadingchange. 1999.

Department of the Army. *United States Army Posture Statement FY99*, February 1998.

Duffek, Elizabeth and Warren Harding. "Quality Management in the Military: An Overview and Case Study." *Special Libraries Association vol. 84, No. 3*, Hanscom AFB Summer 1993, 137-141.

Federal Quality Institute. *Employee Involvement and Quality Management in the Federal Government*. Washington DC. US Government Printing Office, 1993.

General Accounting Office. *Management Practices-US Companies Improve Performance Through Quality Efforts*. Report to the Honorable Donald Ritter, House of Representatives, May 1991.

George, Steven and Arnold Weimerskirch. *Total Quality Management; Strategies and Techniques Proven at Today's Most Successful Companies*. John Wiley and Sons Inc., 1994.

Lieghton, George and Bob Silberg. *Leaders Guide for How to Make Quality…Fail (government edition).* CRM Films. Carlsbad, CA, 1996.

Joint Chiefs of Staff. *A Strategic Plan for the Joint Staff*, 1995.

Joint Chiefs of Staff. *National Military Strategy of the United States of America*, 1997.

Joint Forces Quarterly. Institute for National Strategic Studies, National Defense University. (Summer 1998).

Jones, Keith D. Lt Col. *Total Quality Management as a Potential Solution to Challenges Within the California Army National Guard*, Carlisle Barracks, Pa, US Army War College, 1996.

Juran, J.M. *Juran on Leadership for Quality*. New York: Free Press, 1989.

Lowe, Ted A. and Joseph Mazzo. "Crosby Deming Juran: Three Preachers, One Religion." *Quality*, 25, (September 1988).

Secretary of Defense. Memorandum, Subject: *Quality Management*, August 11, 1997.

Tice, Jim. "At Staff College, the Future is Digital". *Army Times.* vol. 95, No 25, (January 1999).

Tilford, Earl H. Jr. *National Defense into the 21st Century: Defining the Issues*. Carlisle Barracks, Pa. Strategic Studies Institute, June 1997.

Tilford, Earl H Jr. *The Revolution in Military Affairs: Prospects and Cautions*. Carlisle Barracks, Pa. Strategic Studies Institute, June 1995.

Training and Doctrine Command. PAM 525-5. *Force XXI, Operations*. Fort Monroe, Va. August 1994.

Vice President's National Performance Review "Reinventing Government." Address to the Federal Quality Conference. August 2, 1995.